Annual Report
For the year ending
March 31, 1986

Saskatchewan
Science and
Technology

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Science and
Technology

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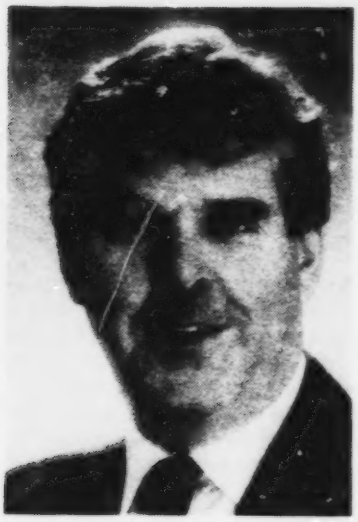


Ray Meiklejohn
Minister

To His Honour
The Honourable F.W. Johnson
Lieutenant-Governor of Saskatchewan
Government House
Regina, Saskatchewan

November 28, 1986

Dear Sir:

May it Please Your Honour:

The undersigned has the honour to submit the Annual Report of the Department of Science and Technology for the fiscal year ending March 31, 1986.

Respectfully submitted.

Ray Meiklejohn
Minister,
Saskatchewan Science
and Technology

Letters of Transmittal

Deputy Minister's Transmittal

A.J.Y. Guy
Deputy Minister

To the Honourable
Minister of Science and Technology
Regina, Saskatchewan

November 27, 1986

Dear Sir:

May it Please Your Honour:

I have the honour of submitting the Annual Report of the Department of Science and Technology for the year ending March 31, 1986.

Respectfully submitted,

A.J.Y. Guy
Deputy Minister

The Strategy: Promoting Advanced Technology Development

Developing a Strategy

Advanced technology occupies a strategic place in Saskatchewan's economic performance, as a major pillar of industrial development. It spans many economic sectors and has many names -- micro-electronics, computer hardware and software, biotechnology, information and communication, energy conservation, instrumentation, and aerospace, to name a few.

Investing resources to research, develop, and produce advanced technology products and services offers Saskatchewan the promise of continued economic growth and employment generation. And the application of new technology to established industrial sectors is critical to securing the province's competitiveness. Consequently, there is a need for Saskatchewan to build technological strength, to improve its capability to innovate, and to exploit economic opportunities associated with the development and introduction of new technologies, products, and services.

This means creating a positive environment for innovation, strengthening Saskatchewan's industrial base in advanced technologies and building supportive linkages between industry, government, and the scientific and educational communities.

Committing to Action

In mid-1983, a science and technology strategy was announced by the Premier of Saskatchewan. The strategy recognized that the foundation of economic, industrial, and social development in Saskatchewan will depend on how well the province can develop, transfer, utilize, and exploit new or advanced technology. It affirmed Saskatchewan's support for an advanced technology sector in the province. On January 1 1984, Saskatchewan Science and Technology was formed and began building links between all segments of the advanced technology sector.

Providing a Full Range of Services

Saskatchewan Science and Technology has a clear and distinctive mandate which provides direction for the Department's work. All initiatives are directed at the co-ordination and facilitation of science and technology activity in the province and the stimulation of the advanced technology industrial sector.

Specifically, Saskatchewan Science and Technology works to:

- stimulate the growth of industry in Saskatchewan by promoting the development, transfer, utilization, and exploitation of technology;
- maximize economic benefits of advanced technology for the people of Saskatchewan;
- co-ordinate the research, science, and technology activities of industry, government, universities, public research institutions, and supply agencies;
- investigate the market potential of science and technology services of the Saskatchewan Research Council and Saskatchewan's universities and public laboratories;
- promote and co-ordinate international, federal, provincial, and inter-provincial science and technology initiatives to promote new technology in Saskatchewan;
- evaluate public policy questions related to advanced technology; and
- serve Saskatchewan people by promoting a dialogue on the implications and issues surrounding advanced technology.

This mandate, in action, has come to be known as the Saskatchewan Model of Advanced Technology Development, and is the blueprint for development in other Canadian provinces. The model has a three-part focus:

- sharing the risk of advanced technology development through a partnership between advanced technology, industry, and government;
- making the right connections by stimulating the innovation process; and
- providing the means to build a solid infrastructure base.

Sharing the Risk

In Saskatchewan there is a clear recognition that industry is the driving force which pulls technology out of the laboratory and launches onto the marketplace. Saskatchewan is well-known for its creative, enterprising, and aggressive innovators and entrepreneurs. These people put new ideas to work, turn advanced technology into new products or processes, and convert this technology into sales.

The Saskatchewan government is a supportive partner, sharing the financial risk with innovators and entrepreneurs. Saskatchewan Science and Technology offers programs and services specifically designed for the needs of advanced technology firms. These programs and services address the high cost of research and development, the financial risk of building advanced technology business, and the market uncertainty inherent in creating advanced technology products and processes.

Stimulating the Innovation Process

Advanced technology refers to products and processes which are at the leading edge of innovation and which provide new solutions for old problems. Innovation is the lifeblood of the advanced technology industry, and the innovation process consists of six interrelated components:

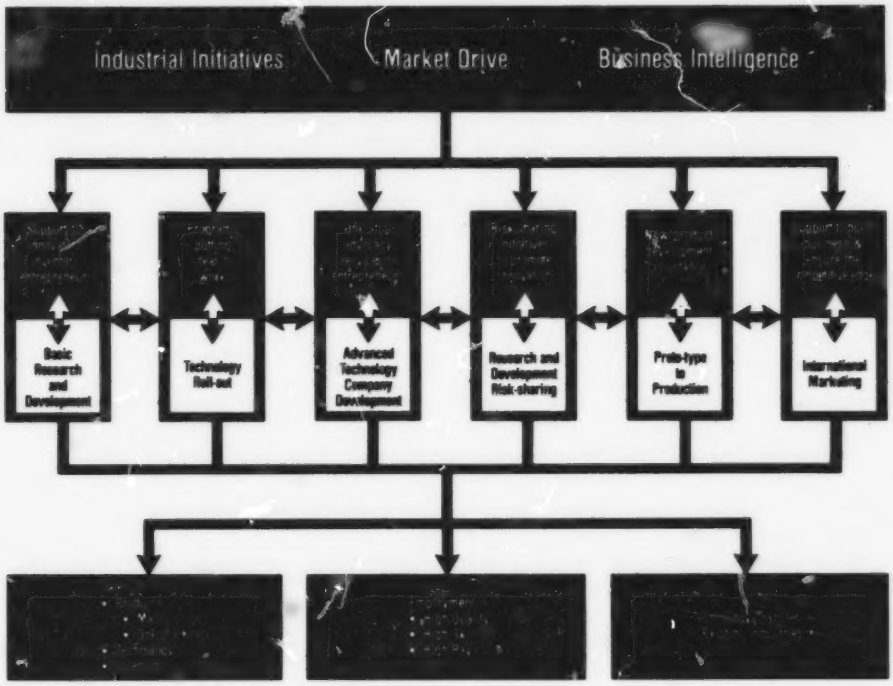
- basic research and development;
- technology roll-out;
- advanced technology company development;
- applied research and development;
- prototype to production; and
- marketing.

Making the right connections between these components is the key to an integrated and dynamic innovation process.

Because the advanced technology sector is complex and diverse, it takes a concerted effort to make these connections. Saskatchewan Science and Technology works to make connections between the people involved in creating, developing, producing, and marketing new technology by bringing together researchers, inventors, scientists, investors, and entrepreneurs. This is accomplished by:

- serving innovators, inventors, and entrepreneurs engaged in basic research and development by referring them to experts for technical and commercial evaluations of innovations;
- assisting firms and laboratories with technology roll-out from the lab into advanced technology companies;
- helping entrepreneurs start up and build advanced technology companies;
- sharing the financial costs of research and development of new technology with Saskatchewan firms;
- providing new product development assistance to put prototypes into production and to manufacture new products; and
- supporting firms which are trying to compete in national and international markets.

Innovation Process



Building a Solid Infrastructure Base

Pressured by the fast-paced global advanced technology race, industry needs a support system to stay at the leading edge. In Saskatchewan, this support system, or infrastructure, includes research and development, training, and business support.

Saskatchewan firms are supported by a variety of research agencies housed in two universities, a provincial research council, federal research agencies, and numerous related and affiliated institutes and organizations. Experts are being trained in Saskatchewan at the province's two universities, four technical institutes, and an advanced technology training centre.

A network of established firms and business associations is providing assistance to new or young firms during critical times in the business cycle.

Saskatchewan has earned an excellent reputation for its infrastructure base. Through its programs and services, Saskatchewan Science and Technology works to strengthen this base.

The Record: Achieving Results for Saskatchewan

Strengthening Our Economy

The success of the Saskatchewan Model of Advanced Technology Development is in the results.

Diversifying our Economic Base

Saskatchewan's advanced technology industry grew from 39 active companies in 1982 to 142 by March 31, 1986. This fiscal year, 20 new firms were established. In 1982, virtually the entire industry was based in Saskatoon. Today, although Saskatoon has experienced rapid growth - to 70 firms - an advanced technology community of over 30 firms is emerging in Regina and the balance of the industry is widely distributed throughout other Saskatchewan communities. Through new and established firms the benefits of advanced technology are being felt throughout Saskatchewan industries, by enhancing productivity and competitiveness, cutting costs, and improving safety in agriculture, mining, the oil industry, manufacturing, and service industries.

Creating New Jobs

Increasing employment in this sector shows that advanced technology means jobs for the people of Saskatchewan. This sector is providing our young people with career opportunities equal to any in Canada. It gives our skilled university and technical school graduates highly paid jobs at the leading edge of technology. Direct employment in the advanced technology industry consists primarily of highly skilled, highly paid personnel averaging $30 thousand to $40 thousand each per year. This fiscal year, employment in the industry resulting directly from projects supported by the Department, increased by over 100. This does not take into account the hundreds of spin-off jobs created indirectly.

Increasing Sales

Advanced technology is a multi-million dollar industry. Sales figures of Saskatchewan firms increased this year from $367 million to $400 million. Saskatchewan advanced technology firms are capturing North American markets and continue to pioneer leading edge technology.

Earning Respect for Saskatchewan

Saskatchewan is currently one of the top three provinces in Canada in space and communication advanced technology sales and is in a position to attain national leadership in agricultural biotechnology, agricultural value-added products, and in-structure fibre optic network systems.

Delivering Support to Innovators and Entrepreneurs

Saskatchewan Science and Technology serves advanced technology companies through an integrated service approach to programs. The source of program funds is the interest yielded by the $50 million Research and Development Division of the Heritage Fund. There are two main groups of programs: The R&D Fund Programs, and the Canada-Saskatchewan Economic and Regional Development Agreement (ERDA) on Advanced Technology.

Promoting Industrial Research and Product Development

Saskatchewan Science and Technology helps clients access funds from a seven-part research and development program formed by Saskatchewan's Heritage Fund. The R&D Fund Programs support research, product development, and industrially-oriented research infrastructure. In 1985-86, the first full year of operation, these programs experienced a significant increase in industrial uptake over their startup year - up from some 20 projects to over 90. These projects totalled over $120 million. The Department shared the risk and levered federal funds through $2.5 million of direct assistance.

Supporting Contractual Research

Through the R&D Fund, offices of university research were established at both provincial universities. These offices were formed to facilitate and promote university contract research, and to provide opportunities for technology transfer from university labs to the marketplace and increased opportunities for university-industry collaboration.

The Office of Research Services at the University of Saskatchewan was established in May 1985 under a contractual arrangement between the University and the Department of Science and Technology. Through this three-year agreement, the Department funds $200 thousand yearly toward the Office's operating costs. This fiscal year, the Office co-ordinated over $30 million of grant and contract research support for private enterprise, crown corporations, international agencies, the University, and government.

The Office of Research Services at the University of Regina was formed in January 1985, under a similar contractual agreement. Under the agreement, Science and Technology funds some of the Office's operating costs with $300 thousand over a three-year period. This fiscal year, the Regina Office of Research Services set in place the groundwork, including an interdisciplinary research advisory committee and a grant deadline data base which puts the Office in a position to take on research important to the development of new technology in Saskatchewan. In its first year of operation, the Office co-ordinated a number of successful and on-going research projects for clients.

Providing Infrastructure Facilities

The Department has facilitated the establishment of research infrastructure facilities worth $30 million in capital investment and $10 million in annual operating funds. Over 95 percent of these funds were levered from the federal government.

Advising Inventors and Entrepreneurs

A wide variety of financial and advocacy assistance was provided to the province's entrepreneurs and inventors to help them develop their technological innovations and plan the establishment or expansion of new technology businesses.

This fiscal year, over 180 inventors participated in the Inventor Services Program. Over 200 companies received assistance in the form of funding, referral to other agencies or departments, business counselling, and advice from experts. This assistance helped these entrepreneurs establish new businesses, develop business plans, commercialize technology products, and develop marketing plans.

Accessing a New Funding Source

This fiscal year, the Canada-Saskatchewan Subsidiary Agreement on Advanced Technology was launched. This five year, $33 million agreement is aimed at establishing and speeding the growth of advanced technology industries in Saskatchewan.

The Department helped clients access assistance from an eight-part program which is equally cost-shared and administered by the governments of Saskatchewan and Canada.

The Agreement got off to a strong start in the past fiscal year. Twenty projects were approved for support, involving provincial expenditures of almost $1 million. Under the Industrial Assistance Program of the Agreement, support was provided to firms carrying out strategic marketing studies, launching a variety of new products onto the marketplace, and financing research and development. These projects are forecast to result in 35 immediate jobs and over 200 long-range permanent jobs.

Strengthening Industry: University Links

The Agreement also helped establish four university research chairs, three at the University of Saskatchewan and one at the University of Regina. Through provincial contributions of just under half a million dollars, the Agreement will lever federal expenditures of some $5 million over the next five years.

Demonstrating Professional Leadership

Maximizing Provincial Research Dollars

This fiscal year, the first government-wide Research Expenditures Package was updated to reflect actual 1984-85 and approved 1985-86 departmental research expenditures. Working with other provincial departments, the Department of Science and Technology co-ordinated and analyzed the $75 million spent annually on provincial research activities in order to increase co-ordination, eliminate overlap, and maximize leverage of research dollars from external sources.

Statistical reports on federal government scientific expenditures in Saskatchewan, and reports on federal science and technology contracts awarded to Saskatchewan contractors, were also published.

Leading Canada in Science and Technology Policy

Through the Department, Saskatchewan continued its role at the forefront of national and international science and technology activities. The Department provided leadership to a federal-provincial task force charged with developing a new national science and technology policy for Canada. This leadership means that Saskatchewan's interests are being championed at a national level.

Developing International Links

The provincial science and technology strategy requires the active pursuit of joint ventures and market niches beyond our borders. This fiscal year, a very high percentage of advanced technology industrial products were exported from Saskatchewan.

To create a receptive environment for increased exports, the Department of Science and Technology, in conjunction with other provincial departments and agencies, developed science and technology and advanced technology industrial links with the United States; Pacific Rim countries like Japan, China (Jilin province), Korea, and Malaysia, Australia and New Zealand; and European countries like West Germany, France, the Netherlands, Switzerland, Sweden, Norway, Denmark, Britain and the Irish Republic. These interactions included the exchange of scientific and technological information, technology transfer, joint venture activities, and attracting foreign advanced technology firms into the province.

Saskatchewan's model of Advanced Technology Development continued to be recognized in Canada and beyond. For example the OECD (Organization for Economic Development and Co-operation) began studying innovation in Western Canada especially the Saskatchewan Model of Advanced Technology industrial development. The completed report will be distributed world-wide.

Exploring New Frontiers

This fiscal year, Saskatchewan ranked third among Canadian provinces selling aerospace technology. To build on this achievement, the Department began participating on a National Space Committee established to oversee the implementation of a $2 billion space program over next 10 years. The Department's efforts were designed to help Saskatchewan firms participate in the Space Program by levering federal funds into the province.

Promoting Science and Technology

Effective communication is the key to establishing the credibility of the province's advanced technology community. This fiscal year, the Department initiated a major communication and information thrust directed at provincial, national and international target groups.

Launching a Major Initiative

A number of business-related publications promoting the advanced technology sector were produced and distributed world-wide. The Department also actively represented the sector at several technology-related shows and exhibitions. Public awareness of the scientific and technology-based activities in the province was heightened through the award-winning television series "A Fine Science". Co-sponsored by the Department, the series showcased developments in Saskatchewan's science and technology community.

The Department's initiative has resulted in an increased understanding and knowledge among the general public, industry and government, of the role of Science and Technology in Saskatchewan's economic development.

Programs and Services: Providing a Full Range of Support

Stimulating Research and Innovation

The following programs are delivered by the Department, and were developed after close consultation with industry.

Capital Equipment (R&D)

Benefit: gives firms access to the best and latest high tech testing equipment. **Criteria:** only applicable to the University of Saskatchewan, University of Regina, Saskatchewan Research Council, and to the cost of specific research contracts negotiated by industry. **Assistance:** funding for up to 50 percent of the cost of specified high technology equipment.

Research Infrastructure (R&D)

Benefit: increases the capability of Saskatchewan research labs so they can meet the needs of firms. **Criteria:** research organizations that provide a service to advanced technology industry. **Assistance:** incremental funding over and above that which is provided by other sources.

Industrial Research (R&D)

Benefit: helps firms develop increased manufacturing capabilities and become more productive and competitive. **Criteria:** companies which are conducting research into new technology products or processes. **Assistance:** complementary to existing federal funding through IRAP and IRDP for up to 25 percent of the cost of eligible research expenses.

Joint High Technology Research (R&D)

Benefit: helps firms exploit a specified need for advanced technology products in the public and private sector. **Criteria:** research that meets a need identified by industry and the Government of Saskatchewan. **Assistance:** up to 50 percent of eligible research costs.

Bridging Capital Assistance (ERDA)

Benefit: helps firms design, develop, or demonstrate new and improved advanced technology products and processes which have reasonable prospects for commercialization. **Criteria:** advanced technology firms with a limited internal cash-generation capacity. **Assistance:** repayable, up-front, interest-free assistance.

University-Industry Collaboration (ERDA)

Benefit: Strengthens the universities' research and training capabilities in areas that industry considers important. **Criteria:** advanced technology firms which can demonstrate a pre-arranged partnership with either provincial university for industrially oriented research. **Assistance:** funding to support salaries and fellowships, research costs, and the purchase of equipment.

Task Forces and Project Teams (ERDA)

Benefit: helps industry pull research out of laboratories and commercialize it. **Criteria:** industry-university groups which are studying the commercial application of research results, investigating related policy issues, or researching new technology products or processes. **Assistance:** funding for the administrative costs of these groups.

Inventor Services

Benefit: gives inventors and innovators access to confidential evaluations of ideas and inventions before money is spent on patents, licenses or further development. **Criteria:** inventors and innovators. **Assistance:** referral to an innovation office for a basic technical evaluation; assistance in applying for commercial evaluation.

Supporting Industry and Business Development

Information Transfer (R&D)

Benefit: provides industry with an extensive information network. **Criteria:** activities such as seminars, conferences, inter-provincial committees, advisory councils, symposia, or visiting experts, which demonstrate a definite transfer of beneficial technological or industrial information into the province and to more than one interested group. **Assistance:** negotiable cost-shared support.

Entrepreneur Services

Benefit: helps entreprenuers set up and run their own businesses. **Criteria:** individuals or firms. **Assistance:** counselling services include: developing of business plans and market strategies; identifying and accessing the Department's programs; referral to other departments, agencies, or experts; accessing the province's solid infrastructure base.

Development Analysis (ERDA)

Benefit: helps industry identify business opportunities which support and speed up the growth of advanced technology industry and which detail new investment opportunites. **Criteria:** individuals, firms, groups, and associations sponsoring third-party studies. **Assistance:** funding support for the direct study costs.

Developing Market and Investment Opportunities

First-User Risk Reduction (ERDA)

Benefit: helps firms launch new products onto the marketplace. **Criteria:** a new or improved advanced technology product with significant market potential. **Assistance:** funding support to assist in offering a price discount or extraordinary follow-up services.

Marketing Support (ERDA)

Benefit: helps firms refine or strengthen their product mix, identify and assess market opportunities, and design market strategies. **Criteria:** firms engaged in market research studies. **Assistance:** funding for the direct costs of strategic marketing studies.

Feasibility Studies (R&D)

Benefit: helps firms with limited marketing and technical assessment capabilities accurately assess whether a proposed product is technically feasible and whether it will sell. **Criteria:** small firms which are working with new technology. **Assistance:** financial assistance up to $2,500 for a technical and commercial feasibility study on a 50/50 cost-shared basis.

Request for Proposals (R&D)

Benefit: helps firms prepare proposals or bids for large projects. **Criteria:** firms which have the technical and financial capability to undertake the research for which they are bidding, and which have a very good chance of winning the contract. **Assistance:** up to one-third the cost of proposal preparation where the cost of the proposal is at least $10 thousand.

Strategic Investment Assistance (EPDA)

Benefit: supports private sector investment. **Criteria:** industrial prospects, foreign or domestic, considered to possess the financial resources, marketing, management, manufacturing, and technical skills needed to successfully exploit an identified investment opportunity. **Assistance:** incentives for feasibility studies and capital investment, to be offered to a list of prospective investors.

Industrial Investment Assistance (ERDA)

Benefit: encourages capital investment. **Criteria:** manufacturing, processing, or service firms either directly involved in, or related to, Saskatchewan advanced technology industries. **Assistance:** incentives for feasibility studies and capital investment.

The Organization and Work: Serving Saskatchewan

Science and Technology Organization as of March 31, 1986

Industrial Development Division

Contracting with Industry

This Division sees, first hand, the exciting new technology advances in Saskatchewan. It works directly with advanced technology firms in Saskatchewan monthly, on a one-to-one basis. This fiscal year, the Industrial Development Division helped firms pinpoint their needs and select the best possible solutions or programs. The staff in the Division consulted regularly with expanding advanced technology firms, providing advice on business planning and technology development. This fiscal year, the Division helped 20 new technology firms become established in Saskatchewan.

Industrial Development Unit

Promoting Innovation and New Ventures
The Industrial Development Unit administers the Inventor and Entrepreneur Programs which help technology innovators develop technologically and commercially viable products and businesses.

Through the Inventor Program, the Unit processed over 180 inventor inquiries through two centres located in Regina and Saskatoon this fiscal year. These inquiries resulted in the commercial evaluation of 28 new inventions at the Innovation Institute in Oregon. The Institute offered advice and counselling on patenting, licensing, and other options available to inventors to help them decide whether to take the next step in developing their products. When inventors decided to proceed with commercialization, assistance was provided by the Unit in preparing business plans and identifying possible funding sources.

Through the Entrepreneur Program, the Unit provided counselling and corporate development assistance to entrepreneurs by helping them develop business plans and marketing strategies. The Unit helped firms identify funding sources, including venture capital. Other vehicles of assistance offered by the Unit included "Lunch and Learn" seminars, co-sponsorship of venture capital seminars, and presentations by highly respected Canadian industrialists such as Denzil Doyle.

Discussions to establish research chairs in Communications and Metallurgy at the two universities weere also initiated. The Unit also provided entrepreneurial and financial services to companies which emerged from research activities at the universities.

Research and Development Funding Unit

Assisting New Industries
The Research and Development Funding Unit works to support existing industry and attract new industries to Saskatchewan, thereby helping to broaden Saskatchewan's industrial base. This Unit administers the Industrial Research and Development Program and helps firms access contractual funding for research and development projects.

This fiscal year, the Unit contracted for over $2.5 million in research and development assistance for 85 projects conducted by 63 companies (see Table 1). These projects created over 100 immediate jobs with a potential increase of over 1,000 additional permanent positions as the commitments mature. In addition, numerous spin-off jobs were created in the support industries as a result of this development work.

As a result of this assistance, additional funds from the federal government and investment by the private Sector were levered. For every dollar contracted by the Department, two dollars were committed by the federal government, and $2.3 were invested by the private sector.

Stimulating University Research
Through liaison with the Offices of University Research at the University of Saskatchewan at Saskatoon, and the University of Regina, private companies were given a window into research being done at both universities. Research activities by faculty, and the interaction between the Universities, the private sector, and government were stimulated as a result.

Governmental Research, Science, and Technology Division

Co-ordinating Research and Development

This Division works to ensure that the province receives the maximum benefit from money spent on research, science, and technology by both the Canadian and Saskatchewan governments. It also works to ensure that federal government policies do not adversely affect Saskatchewan's advanced technology community and that the province's science and technology capabilities are effectively communicated both within and outside of Canada.

Provincial Co-ordination Unit

Tracking Research Funds
During this fiscal year the Government of Saskatchewan spent over $76 million in direct support of research and development. For its second year, this Unit gathered data on these Research and Development efforts, and electronically compiled the "Research Expenditure Package". Analysis of this package is helping the province eliminate duplication of research expenditures, and direct efforts consistent with provincial priorities (see Table 4).

Sharing Information
This Unit was active in sharing information and co-ordinating related research and development projects among provincial government departments. In addition, the Unit co-ordinated the Statistics Canada survey on scientific activities of the Government of Saskatchewan.

Active in Special Projects
The Unit was active in a number of special projects, including the implementation of a science award program under which winners of regional science fairs were recognized for their success. In addition, this Unit was responsible for serving in a secretarial capacity on the Canada-Saskatchewan Memorandum of Understanding on Advanced Technology.

Intergovernmental Unit

Negotiating for Saskatchewan

Delivery of programs under the Canada-Saskatchewan ERDA Subsidiary Agreement was initiated by the Unit this fiscal year. The ERDA programs were designed to encourage a climate for innovation and to encourage the development of advanced technology business in Saskatchewan. During the fiscal year over $970 thousand was approved by the provincial and federal governments for a variety of projects (see Table 2).

The Unit also provided leadership for the New Technology Steering Committee, set up to implement the Canada-Saskatchewan Memorandum of Understanding, to develop a new Course of Action, and to expand the Committee's membership to include representation from more federal and provincial technology-related departments. The Committee carried out extensive reviews of research and development activity in Saskatchewan in the areas of agricultural biotechnology, aquaculture, micro-electronics and communications, food technology, highly qualified personnel, the dissemination of government program information, space, water resources, and heavy oil, lignite, and potash. The new Course of Action allows for improved communication and interaction between the federal government and the province.

The Intergovernmental Unit monitored, analysed, and co-ordinated responses to federal policy initiatives and changes such as "The Nielson Task Force Report", reports on the Natural Science and Engineering Research Council's Strategic Grants, and the February 26, 1986 federal budget.

The Unit also assumed a leadership role for the interprovincial response to the federal government's call for a National Science and Technology Policy. Papers on provincial and territorial views on the development of a science and technology policy and important policy issues were prepared by the Unit. These efforts have helped to improve the federal government's understanding of Saskatchewan's and the other provinces' views on science and technology.

Active Abroad

The Unit was active in consultations with Japan, Great Britain, New Zealand, Western Australia, the United States, Belgium, and West Germany. A second scientific and technical delegation from Jilin Province in China was hosted, resulting in increased sales of telecommunication equipment to that country.

Direct contacts were established between the Unit and Canada's trade and scientific counsellors posted abroad. These contacts helped to improve a world-wide information flow on Saskatchewan's advanced technology capabilities.

Start-up funding and support for a joint project between Canada and India, through the Shastri Indo-Canadian Institute and the University of Regina, resulted in a major research project on the use of computers in education in both countries. This two-year project will involve nearly $100 thousand of funding from the International Development Research Council in support of co-operative research to both countries. Through this effort Saskatchewan's university researchers will gain greater international recognition.

The Unit also supervised the development of an OECD review of science and technology in Western Canada, and development of a strategy for science and technology development in each of the four Western provinces. This effort has placed Saskatchewan's strategy in an international perspective.

Communication Services Division

Getting the Story Out

The Communications Division is an information clearing house between Saskatchewan Science and Technology and the many publics it serves. There is special emphasis on raising an awareness of the science and technology sector and its implications for Saskatchewan people.

Developing Communication Tools
Supporting the work of other Divisions to strengthen the advanced technology sector, this Division developed an integrated communications strategy, comprehensive programs, and appropriate tools.

The accomplishments of the advanced technology sector were publicized through a number of vehicles such as news releases, news conferences, published articles, and the Department's quarterly newsletter "Frontiers". In addition, a 144-page full-colour "Technology Transfer Catalogue" was developed in direct response to requests from innovators and entrepreneurs for greater exposure. The Catalogue profiles advanced technology companies and their products, and is helping companies make provincial, national, and international connections.

The funding programs and support services of the Department were publicized through a variety of media. Advertisements were placed in provincial newspapers and magazines to encourage innovators and entrepreneurs to access the Department's progress. Print materials developed included two booklets, "An Invitation to Prosper: The Saskatchewan model of Advanced Technology", and "Sharing the Risk: Partnership Between Advanced Technology, Industry, and Government". The Division also developed audio-visual materials which portray the rich and supportive advanced technology environment in Saskatchewan, including a slide tape presentation and a full-colour portable display.

Keeping People Informed
Because the flow of information is vital to serving the advanced technology sector, this Division processed information on an ongoing basis. Provincial and national newspapers and magazines, as well as materials and reports received by the Department, were monitored for information of interest and relevance to the Department and to advanced technology industry in Saskatchewan. The Division responded to requests from industry and government for information and materials, and regularly disseminated technology-related information to an audience of researchers, innovators, investors, educators, public servants, ambassadors, and entrepreneurs world-wide.

Building a High Profile
Special events, such as news conferences, audio-visual presentations, exhibitions, and technology shows, raise the profile of Saskatchewan's supportive environment for technology business. During this fiscal year, the Communications Division, in co-operation with the Industrial Development Division, promoted Science and Technology at a number of exhibitions, such as the Canadian High Technology Show in Toronto and Barclay's Techmart in Birmingham, England. The Division also co-ordinated the Government of Saskatchewan's input for Spectrum '86, a major technology exhibition unique in North America, which is organized every four years by the Engineering Society of the University of Saskatchewan. The Division worked in an advisory capacity to help the organizers develop publicity, plan the banquet, and conduct the opening ceremony. The Division also helped several firms organize news conferences and other publicity opportunities. These events stimulated the interaction between the Department, the public, and the advanced technology sector in Saskatchewan, Canada, and abroad.

Administrative Services Division

Managing People, Paper, and Process
The Administrative Services Division manages administration for the Department, and interacts extensively with the Department of Revenue and Financial Services - Treasury Board Division, the Public Service Commission, and other central agencies.

This fiscal year it provided support services to the Department in areas such as personnel, accounting, secretarial support, filing, mailing, library, and purchasing. It assisted the Deputy Minister and Executive Directors in various projects, and provided advisory services to the Divisions and Units. This Division was responsible for the preparation and control of Departmental budgets.

The Administrative Services Division continued to be involved in Departmental organization, establishing systems and procedures, and staff recruitment. With the announcement of the relocation of the Department's headquarters to Saskatoon, this Division began planning the physical aspects of the new offices as well as the relocation process.

The Challenges Ahead: Responding to Changing Needs

Relocation of Headquarters

The relocation of the Department's headquarters to Saskatoon was announced in the March 1986 speech from the Throne. The relocation plan was a direct response to the concentration and high demand of advanced technology companies and infrastructure in Saskatoon. While the relocation plan was designed to further a move towards decentralization, it also called for the maintenance of a Field Office with Industrial Development staff in Regina to ensure full service to advanced technology companies in Southern Saskatchewan. The new Saskatoon head office opening in Saskatoon on September 2, 1986, strategically locates the Department in Innovation Place, a research and development park adjacent to the University of Saskatchewan.

Technology Transfer

Recognizing that technology transfer is an important key to accelerate the growth of the advanced technology sector and strengthen the province's economy, the Department began exploring ways to facilitate the licensing of technology, and to support joint business ventures. For example, the Department investigated opportunities at a technology transfer show in Britain in October 1985 and began planning to actively represent the province's firms at two shows in the coming year. The Department also developed a technology transfer catalogue to help Saskatchewan advanced technology firms publicize their technology requirements and offerings. The licensing of technology, which involves long-term financial agreements for the use of advanced technology processes, has the potential to give Saskatchewan firms another means to gain an edge on competition by helping them make more efficient use of research and development dollars and increasing their revenues in the form of up-front cash and royalty payments.

Meeting the Future Confidently

Advanced technology is an exciting and expanding frontier, and Saskatchewan is on its edge. This fiscal year, Saskatchewan Science and Technology shared the risk of innovation and rapid growth with the private sector - and Saskatchewan has reaped the benefits. The Department will continue to build on the strong foundation it has established, to achieve the province's commitment of maximizing the benefits of science and technology for the people of Saskatchewan.

Financial Review

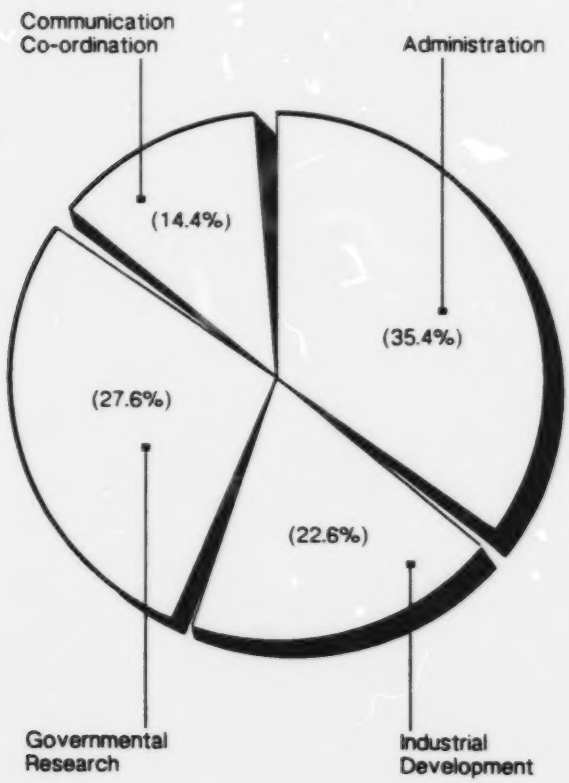
Statement of Expenditures for the Fiscal Year Ending March 31, 1986

Consolidated Fund

Administration	$402,791.56
Governmental Research	313,313.92
Industrial Development	256,328.87
Communication Co-ordination	163,344.24
Total	**$1,135,778.59**

Fiscal Year Ending March 31, 1986

Consolidated Fund Expenditures



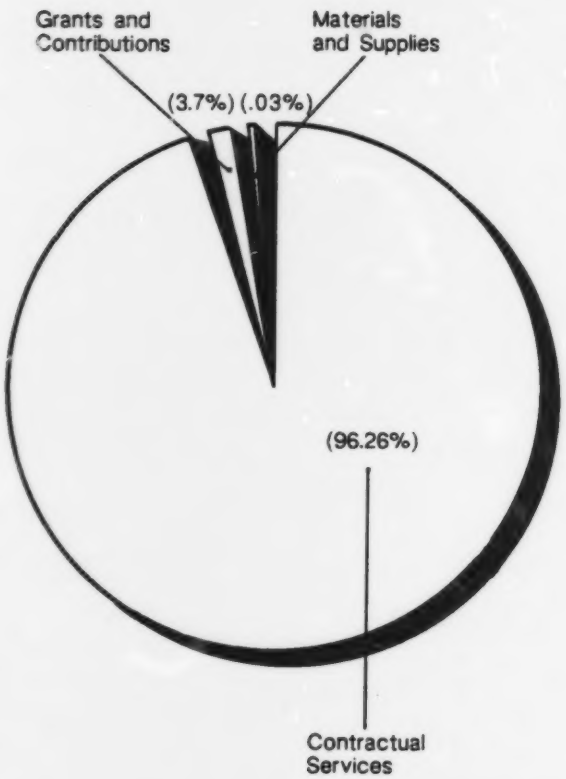
Saskatchewan Heritage Fund

Research and Development Division

Contractual Services	$2,724,809.98
Materials and Supplies	873.42
Grants and Contributions	104,750.00
Total	**$2,830,433.40**

Saskatchewan Heritage Fund

Research and Development Division



Tables

Table 1

Research and Development Contractual Services
April 1, 1985 - March 31, 1986

Firm	$
Accutrak Systems Limited Regina Industrial Research	5,875
A-1 Steel Saskatoon Industrial Research	1,349
Agro-Tech Systems, Inc. Saskatoon Industrial Research	1,688
Aquifer Management Technologies Corp. Regina Information Transfer	5,300
Avonlea Mineral Industries Ltd. Regina Industrial Research	2,566
Barrich Farms Outlook Industrial Research	37,075
BDM Information Systems Ltd. Saskatoon Joint Technology Research	760,000
Beck Technology Incorporated Regina Industrial Research (2)	18,000
Black Hawk Regina Industrial Research (2)	8,195
Boratec Inc. Saskatoon Industrial Research	9,000
Can Mar Grain Regina Industrial Research	3,265
Canadian Seed Coaters Ltd. North Battleford Industrial Research	28,386
Canaerotech Inc. Saskatoon Industrial Research	5,375
Continental Saskatoon Capital Equipment	5,233
Cortech Systems Ltd. Saskatoon Industrial Research	9,990
D.E.L. Compu-Cable Systems Inc. Saskatoon Industrial Research	12,152
Develcon Electronics Ltd. Saskatoon Industrial Research	16,625
Distinctive Electronic Manufacturing Saskatoon Industrial Research	22,466
Dyna-Fab Industries Ltd. Watson Industrial Research	7,363

(Continued)

Table 1

Research and Development Contractual Services
April 1, 1985 - March 31, 1986
(Continued)

Firm	$
Global Technologies Incorporated Regina Joint Technology Research	85,290
Ground Engineering Ltd. Regina Request for Proposals	3,667
Helitronics Ltd. Saskatoon Industrial Research	2,370
Horizon Robotics Systems (Canada) Inc. Saskatoon Industrial Research	800
Innovative Research Inc. Regina Industrial Research	6,250
International Road Dynamics Inc. Saskatoon Request for Proposals Industrial Research (2)	91,159
Inventor-Manufacturer Services Saskatoon Industrial Research	2,166
Joytec Ltd. Saskatoon Industrial Research (2)	45,000
MCS Media Comp Saskatoon Industrial Research	3,750
Morris Rod-Weeder Company Ltd. Yorkton Industrial Research	4,000
Mraz Consulting Saskatoon Request for Proposals	3,805
PGE Technology Canada, Inc. Saskatoon Industrial Research	41,522
Philom Bios Inc. Saskatoon Industrial Research	5,910
POS Pilot Plant Saskatoon Information Transfer	6,000
Prairie Systems & Equipment Ltd. Saskatoon Industrial Research	6,250
Saskatchewan Dehydrators Association Tisdale Industrial Research	9,150
Scientific Instrumentation Ltd. Saskatoon Request for Proposals	3,900
SCI-TEC Instruments Inc. Saskatoon Industrial Research	29,446

(Continued)

Table 1

Research and Development Contractual Services
April 1, 1985 - March 31, 1986
(Continued)

Firm	$
SED Systems Inc./Sask Expo '86 Saskatoon Industrial Research	43,220
SED Systems Inc. Saskatoon Industrial Research Request for Proposals (9)	954,397
Settler Computer Technologies Inc. Regina Industrial Research	14,690
Sheltek Systems Inc. Rocanville Industrial Research	7,063
Smith-Roles Saskatoon Industrial Research	15,040
Software Support Ltd. Regina Industrial Research	3,750
Spectron Computer Corporation Saskatoon Joint Technology Research	33,000
Spectrum '86 Saskatoon Information Transfer	15,000
Sterling Microelectronics Ltd. Regina Industrial Research	9,125
Supercart International Inc. Regina Industrial Research	57,200
Triple T Enterprises Regina Industrial Research	3,780
Vale Farms Ltd. Indian Head Industrial Research	9,353
Wild Rice Airboats Limited Martensville Industrial Research	2,000
517817 (Sask) Saskatoon Industrial Research	1,762
Total Value of Contracts signed during the fiscal year	**$2,479,718***
Total Work Done under these contracts and paid out to firms	**$1,569,211.67**

***Includes projects extending to 1988**

Table 2

Canada-Saskatchewan Subsidiary Agreement on Advanced Technology
Grants and Contributions
April 1, 1985 - March 31, 1986

Firm	$
SENSTEK Ltd. Saskatoon Market Support and First User	57,890
DMEnterprises Inc. Saskatoon First User (2)	79,557
SCI-TEC Instruments Inc. Saskatoon First User (2)	106,663
Spectron Computer Corporation Saskatoon First User	50,000
Prairie Systems & Equipment Ltd. Saskatoon First User (2)	13,867
Accutrak Systems Limited Regina First User (2)	15,826
MacDougall & Associates Consulting Ltd. Saskatoon First User	9,996
Biostar Inc. Saskatoon University/Industry Collaboration	185,442
SED Systems Inc. Saskatoon University/Industry Collaboration	250,000
D. Boag Saskatoon Development Analysis	45,843
D.E.L. Compucable Systems Inc. Saskatoon Bridging Capital	18,000
Joytec Ltd. Saskatoon Bridging Capital	120,000
MCS Medic Comp Saskatoon Bridging Capital	18,000
Total Value of Contracts signed during the fiscal year	**$971,084**
Total Work Done under these contracts and paid out to firms	**$603,522.44**

Table 3

Other Heritage Fund Activities
April 1, 1985 - March 31, 1986

Major Project Expenditures	$
Office of Research University of Regina	100,000.00
Office of Research University of Saskatchewan	200,000.00
Inventor Services Information	2,328.74
Inventor Services Centre University of Regina	20,000.00
Inventor Services Centre Saskatchewan Research Council	20,000.00
Entrepreneur Program and Special Studies	315,370.55
Total	**657,699.29**

Table 4

Total Research Expenditures by the Government of Saskatchewan

Department/Agency	1983-84 $000	1984-85 $000	1985-86 $000
Advanced Education and Manpower*	27,170	27,924	29,469
Agriculture	4,981	5,646	11,523
Consumer and Commercial Affairs	105	304	50
Co-operation and Co-operative Development	221	223	216
Culture and Recreation	402	499	540
Economic Development and Trade	611	1,031	1,202
Education	202	347	459
Employment Development Agency	-	-	350
Energy and Mines	4,927	4,264	6,037
Environment	419	916	1,501
Executive Council	554	388	473
Finance	1,008	1,052	1,086
Health	3,293	2,861	3,322
Highways and Transportation**	293	321	2,079
Indian and Native Affairs	321	205	182
Justice	370	986	1,401
Labour	295	357	388
Northern Affairs Secretariat	-	-	-
Ombudsman	-	-	-
Parks and Renewable Resources	1,539	1,541	2,407
Provincial Auditor***	-	-	-
Provincial Library	29	31	10
Provincial Secretary	-	-	-
Public Service Commission	157	162	176
Revenue and Financial Services	124	102	146
Rural Development	289	282	303
Saskatchewan Assessment Authority	50	53	55
Saskatchewan Crop Insurance Corporation	68	98	160
Saskatchewan Housing Corporation	350	415	418
Saskatchewan Research Council	3,876	4,106	4,081
Science and Technology	573	1,735	3,745
Social Services	815	2,892	3,539
Supply and Services	500	1,527	235
Tourism and Small Business	441	264	458
Urban Affairs	449	547	284
Women's Secretariat	-	39	45
Total Expenditures	54,432	61,118	76,340

* Includes Saskatchewan Archives Board as extramural expenditure
** Includes Highway Traffic Board as intramural expenditure
*** Research Expenditure Submission not required